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New Orleans District

CULTURAL RESOURCES SERIES

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**CULTURAL RESOURCES INVESTIGATIONS  
IN THE VICINITY OF FORT JACKSON,  
PLAQUEMINES PARISH, LOUISIANA:  
THE PROPOSED SOLARI BORROW AREA**

FINAL REPORT

August 1989

MUSEUM OF GEOSCIENCE  
Louisiana State University  
Baton Rouge

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Prepared for

U.S. Army Corps of Engineers  
New Orleans District

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<p>In late September 1988, the Museum of Geoscience at Louisiana State University began cultural resources investigations of the proposed Solari borrow pit area in Empire, Plaquemines Parish, Louisiana. This work is part of the U.S. Army Corps of Engineers, New Orleans District, New Orleans to Venice Hurricane Protection Project. Investigations consisted of a records review and historical investigation of the area near the project and Plaquemines Parish in general. The on site investigation consisted of intensive pedestrian survey coupled with shovel testing. The historical and archaeological investigations of the area indicated there were no historic or prehistoric cultural resources within the proposed Solari borrow pit area.</p>				
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## DEPARTMENT OF THE ARMY

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS

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NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO  
ATTENTION OF:


November 30, 1989


Planning Division  
Environmental Analysis Branch

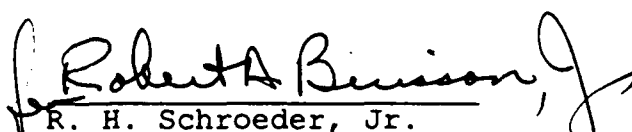
To The Reader:

The investigation reported in this volume was designed, funded and guided by the U.S. Army Corps of Engineers, New Orleans District as part of our cultural resources management program. The effort documented in this report was a cultural resources investigation of the Solari Borrow Area in the vicinity of Fort Jackson.

We concur with the Contractor's findings and recommendations.

  
Edwin A. Lyon  
Technical Representative

  
Michael E. Stout  
Authorized Representative  
of the Contracting Officer

  
R. H. Schroeder, Jr.  
Chief, Planning Division

CULTURAL RESOURCES INVESTIGATIONS IN THE  
VICINITY OF FORT JACKSON, PLAQUEMINES PARISH, LOUISIANA:  
THE PROPOSED SOLARI BORROW AREA

FINAL REPORT

by

Dennis Jones

Prepared for  
U.S. Army Corps of Engineers  
New Orleans District

Contract No. DACW29-88-D-0123  
Delivery Order No.0003

Museum of Geoscience  
Louisiana State University  
Baton Rouge, Louisiana

AUGUST 1989

# CULTURAL RESOURCES MANAGEMENT SUMMARY

Reviews of the appropriate historical and legal records indicated that it was unlikely that any historical or archeological sites would be encountered in the area of the Solari borrow pit. Such was the case. The only human activity that apparently ever occurred on this parcel was the oil explorations efforts of Mr. Nicholas Olivier who leased the land for that purpose in the late 1940s. This activity apparently left no standing structure, nor was it the scene of any prolonged habitation. No historical records exist which indicate that these oil explorations were ever successful and it is assumed that they were not. In addition, the historical debris found on the Solari property is of such recent origin and without concentration that it can not be considered a significant cultural resource. The low elevation and poor drainage of the area of the Solari borrow pit are probably the primary reasons this property has never seen much human occupation.

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## PREFACE AND ACKNOWLEDGEMENTS

In September and October of 1988, the Museum of Geoscience at Louisiana State University conducted historical and archaeological investigations into the the proposed Solari borrow pit area in Empire, La. This work was done under contract to the U.S. Army Corps of Engineers, New Orleans District.

The author would like to thank those individuals who contributed to this project. Dr. Edwin Lyon was the Technical Representative for the New Orleans District of the Army Corps of Engineers. He provided maps, aerial photos, and information about previous investigations in the area. Jill-Karen Yakubik and Todd Smith did archival work on the Solari property. The author was assisted by Bill Flores, Kenneth Jones, and Stuart Speaker during field work. Geomorphological expertise was provided by Joann Mossa of the Louisiana Geological Survey and research of Plaquemine Parish history was conducted by Dr. Brady Banta of the Department of History at Louisiana State University. Joyce Nelson of the Cartographic Information Center at LSU helped with information about historic maps of the Lower Mississippi Delta region. Dr. Malcolm Shuman of the Museum of Geoscience assisted in the logistics and organization for field work and aided in the editing of this report.

# TABLE OF CONTENTS

	Page
Letter from Corps.....	1
Cultural Resources Management Summary.....	3
Preface and Acknowledgements.....	4
List of Figures.....	6
Introduction.....	7
Natural Setting.....	8
Lower Mississippi River Valley Geology and Geomorphology...	8
Geology and Geomorphology of Project Area.....	11
Flora and Fauna.....	13
Summary of Prehistoric Culture History of Louisiana.....	16
Summary of Historic Events Influencing Project Area.....	19
Early European Exploration and Colonization.....	19
European and American Settlement.....	24
Previous Archeological and Cultural Resources Investigations in Region of the Project Area.....	28
The Solari Borrow Pit.....	34
Historical Investigations.....	34
Archeological Investigations.....	35
Bibliography.....	39

## LIST OF FIGURES

	Page
1. Map showing the delta complexes and lobes of Mississippi River Plain.....	10
2. Portion of Guillame De Isle' 1702 <u>Carte de la Riviere de Mississippi</u> . ....	23
3. Prehistoric Indian Sites in Lower Mississippi River Delta, modified from Kniffen, 1936.....	29
4. Lower Mississippi Delta portion of McIntire's (1958) map of coastal archaeological sites.....	30
5. Portion of the Empire, La. 15' Quadrangle, 1960, showing area of Solari borrow pit and nearby archaeological sites..	32
6. Portion of Sulphur, La. 7.5' Quadrangle, 1973, showing Empire, La. and location of Solari borrow Pit.....	36
7. Map of Solari borrow pit area and location of abandoned oil well and related features.....	37



## INTRODUCTION

In September 1988, the Museum of Geoscience at Louisiana State University received notice to proceed in a cultural resources investigation of the area of the proposed Solari borrow pit in Empire, La. This levee construction is in Reach A of the New Orleans to Venice Hurricane Protection Project.

Previous work on the cultural resources aspects of this levee construction project had been undertaken by Coastal Environments, Inc. (CEI) in 1988. Part of that work had included an intensive cultural resources survey of two proposed borrow pits near Tropical Bend and Homeplace, La. on the Mississippi River. Those locations, as well as the Solari borrow pit are in Plaquemines Parish, Louisiana.

The site files of the Louisiana Division of Archaeology, various historical documents, and sources of cartographic information were consulted for preparation of this report. In addition, an intensive pedestrian survey and shovel testing program was carried out at the 24 acre parcel designated as the area of the Solari borrow pit. This report gives the results of the historical and archaeological investigations.

## THE NATURAL SETTING

### Lower Mississippi River Valley Geology and Geomorphology

The Mississippi River is the largest river on the North American continent, draining approximately 1.24 million square miles. The lower Mississippi River extends from Cairo, Illinois, to the Gulf of Mexico. It follows a southerly course to Donaldsonville, Louisiana and then a southeasterly course to the Gulf. The downstream portion of the modern Mississippi River, which includes the project area, is located in the Mississippi delta plain, extending from the Atchafalaya distributary to the Gulf of Mexico. It is positioned near the axis of the Gulf Coast Geosyncline within the lower reaches of the Mississippi Embayment.

The Mississippi's delta plain consists of deposits of abandoned and active deltas and channels of the Mississippi River. These partially-overlapping delta complexes and lobes are the product of shifting of the Mississippi River during the Holocene. The Mississippi River alluvial valley contains distinctive meander belts that correspond to the delta complexes. Holocene deltaic sediments overlie Pleistocene strata at depths to 700 feet and increase in thickness toward the modern delta (Kolb 1962).

The lower Mississippi River basin in southeastern Louisiana, as defined by the U.S. Geological Survey, is bounded on the west and the east by artificial and natural levees. It is narrow in width and expands on the downstream end because flow in the Mississippi delta is largely unconfined. The Pontchartrain basin to the east, a marginal basin between the Mississippi River deltaic distributaries and the Pleistocene uplands of the Florida Parishes, and the Barataria basin to the west, a large intertributary basin, flank the modern Mississippi River. Notable cities, towns, and reference points along the river include Tarbert Landing (mile 306.3), St. Francisville (mile 266.0), Baton Rouge (mile 233.8), New Orleans (mile 106.2), Belle Chasse (mile 76.0), and the Head of Passes (mile 0.0).

The delta plain is characterized by elevations near sea level, by lakes and lake systems, by ancient distributary channels of the river, by numerous tidal bayous, and by numerous islands, some that consist principally of marsh, showing the extent of deterioration of broad marsh areas into isolated remnants, and others that are transgressive sandy barrier islands located at the seaward edge of the delta plain and in the Gulf of Mexico.

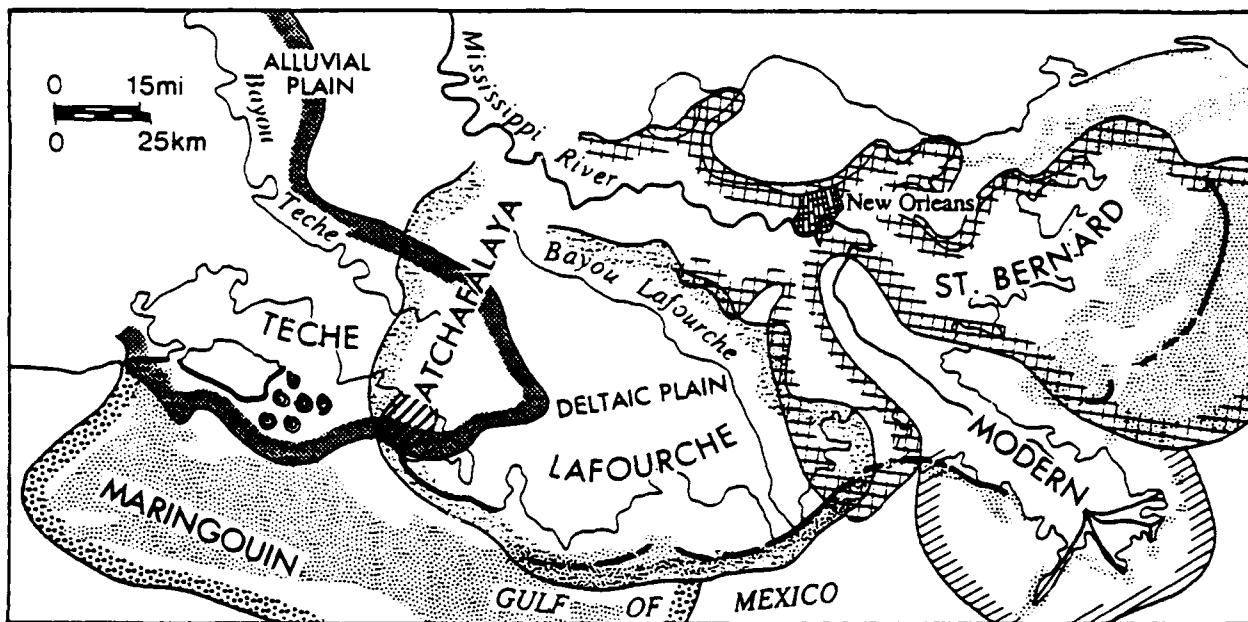
Geologic environments in the Mississippi River delta plain and project area that were recognized by Fisk (1947) are meander belt deposits, including point bar environments, topstratum and slough; abandoned channel environments including chute cut-offs and neck cut-offs; natural levee deposits; and backswamp deposits. Environments mapped by Kolb (1962) include natural

levee; inland swamp; fresh water marsh; fresh to brackish water marsh; saline to brackish water marsh; floating marsh or flotant; abandoned course or distributary; recent point bar, consisting of predominantly sandy deposits; and ancient point bar, consisting of predominantly silty deposits. The Geologic Map of Louisiana at the 1:500,000 scale recognizes four Holocene geologic environments in the Mississippi River delta plain, namely natural levee, alluvium, delta plain-fresh marsh, and delta plain-salt marsh (Snead and McCulloh 1984).

During the Wisconsin or latest Pleistocene deglaciation, when sea level was approximately 300 feet below present, the Mississippi valley became deeply incised within coastal plain sediments (Fisk 1944). Sea level began to rise after the glacial maximum, between 20,000 and 17,000 years before present. Deltaic development of the Holocene Mississippi River began when sea level rise began to slow. The river has shifted its position several times to a channel with a steeper gradient when the channel became overextended.

The delta plain consists of six major Holocene delta complexes (see fig. 1), each first experiences a constructive phase and then undergoes a destructive phase. Some evidence indicates that older complexes and lobes are also buried by these six younger delta complexes. Four of these complexes, namely, the Maringouin, Teche, St. Bernard, and Lafourche, are in various stages of deterioration, while two of these, the Modern and Atchafalaya, are actively prograding or outbuilding. Each major course or belt of the Mississippi River during the Holocene is associated with a delta complex. The individual lobes within each complex are the products of distributary networks (Frazier 1967). Subdeltas are important components of the delta lobes, which in turn are the components of delta complexes. Subdelta deposits vary in a real extent from small splays, to minor subdeltas, to major subdeltas.

The constructive phase begins when a platform is developed as sediments are dispersed and deposited onto the inner continental shelf. The platform is built up by flooding, with flood deposition being thickest adjacent to the channel or distributary. Sediments deposited during overbank stages on the outside of bends form natural levees and alluvial ridges composed principally of fine sand and silt which slope away from the river. Natural levees coalesce and increase in elevation with increased time of meander belt occupation. As the natural levees build up, they confine increasingly higher amounts of water until only high floods are capable of overtopping the levees and providing flow to backswamp areas. Vegetation growth increases in backswamp areas once the floodplain stabilizes, and organic peats accumulate more rapidly. Fine sand and silt may also accumulate in crevasse splays, and are deposited in clayey or mucky backswamp and marshes when levees are breached during floods.



**KEY**

●●●	Shell Reef
—	Barrier Shoreline
■	Sand

DELTA COMPLEX	AGE (YEARS BP)
Maringouin	7250-6200
Teche	5700-3900
St. Bernard	4600-1800
Lafourche	3500-400
Modern	Active
Atchafalaya	Active

FIGURE 1. DELTA COMPLEXES AND LOBES OF THE MISSISSIPPI RIVER PLAIN (AFTER FRAZIER 1967). SOURCE MOSSA ET AL 1985.

Distributaries develop after the flow bifurcates around a longitudinal bar, a process which may be repeated frequently. The Mississippi delta shows a birdfoot shape because the Mississippi delta is outbuilding in deep water. The Atchafalaya delta and the abandoned delta lobes that have been deposited in shallow water, in contrast, have a lobate morphology.

Upstream diversion will eventually occur when the channel shifts to a shorter course. The destructive phase of the delta complex is initiated when increased subsidence occurs from compaction and dewatering, because of lack of sediments supply. Marine processes rework the seaward edge of the abandoned delta complex, concentrating the sand-sized sediments into a transgressive barrier shoreline (Kwon 1969; Penland et al. 1981). The transgressive barrier shoreline consists of an erosional headland of barrier beaches and marginal spits that are typically flanked by barrier islands. With increased subsidence and erosion in the backbarrier region, the barrier shorelines may become disconnected from the headland and form barrier island chains. Ultimately these may become submerged and form inner shelf shoals.

#### Geology and Geomorphology of the Project Area

Previous research on the geology and deltaic chronology in Plaquemines Parish includes that conducted by Coleman and Gagliano (1964), Fisk (1944, 1947, 1955, 1960, 1961), Frazier (1967, 1974), Kolb (1962), Kolb and van Lopik (1958), Morgan (1977), Russell (1936), Scruton (1960), Torrey et al (1988), and Torrey (1988). There has also been much research on geological problems in Plaquemines Parish including that of Gagliano and others (1981), Keown et al (1986), Penland and Boyd (1981), and Ramsey and Moslow (1987), in addition to other investigations.

The project area is a proposed borrow pit located in the town of Empire near river mile 28.8 on the west bank of Mississippi River in Plaquemines Parish, Louisiana. Surficial deposits are a product of Plaquemines-Balize or Modern delta complex of the Mississippi River. This delta complex initiated approximately 950 years B.P. and is actively prograding at present.

The project area is located on the surface of the Plaquemines lobe of the Modern delta complex. Deposition of the Plaquemines lobe, the early distributary system of the Modern delta, initiated approximately 950 years ago. The Balize delta lobe, the second and present distributary system of the complex, consists of several subdeltas with a chronology much better defined than the earlier complexes (Morgan 1977). The Balize delta lobe is the only deep water delta lobe of the Mississippi River and thus has an unusual birdfoot morphology.

Although much of the Plaquemines-Balize delta complex and modern Mississippi delta have been deposited in a subdelta environment, the project area in the vicinity of Empire was

influenced more so by deposition adjacent to the Mississippi channel. The natural levee deposits in the project area are among the few types of landforms suitable for habitation in the modern Mississippi River delta region. Initial human occupation could occur once the levees developed sufficient subaerial expression. These levees are periodically flooded by overbank flow and storm surges, but could still be used by humans.

Natural levee deposits in the area have a thickness of up to 15 ft. in the vicinity of Empire (Kolb 1962), with deposits overlying marsh and intradelta deposits (Kolb 1962). The closest distributary is abandoned and is about 1.5 mi from the proposed borrow area (Kolb 1962). Depths to the Pleistocene in this area are 300 to 400 ft. (Kolb 1962).

In the vicinity of the proposed pit, elevations are less than 5 ft. and, in places, below sea level. The site is on land located between two artificial levees: the mainline Mississippi River levee and the New Orleans to Venice hurricane protection levee. Levee elevations in many places have been augmented several feet by the Corps of Engineers for flood protection. Elevations of swamps and marsh have decreased in recent years due to oxidation dewatering, and subsidence after artificial drainage.

The Mississippi River is a dynamic system which, despite human intervention, experiences extreme stage variations and channel migration. The highest recorded stages in the area were during Hurricane Camille in August 1969, which inundated the project area and raised water levels to 15 ft. in the vicinity of the Mississippi delta. The Mississippi River has migrated westward toward the project area approximately 500 ft. between the 1879-94 and the 1973-75 hydrographic surveys in the vicinity of the proposed pit (Torrey 1988).

Soils in the project area include the following: 1) the Harahan-Westwego-Rita association, developed in former swamps and marshes. They are level poorly drained soils that have a clayey or mucky surface layer and clayey, loamy, or mucky underlying material; and 2) unnamed Aquents, developed in spoil areas, which are level, poorly-drained soils that are stratified and clayey to mucky throughout the profile (USDA in press).

Land loss is presently a serious problem in Plaquemines Parish because of the high rates of relative sea level rise (the combination of eustatic sea level rise and subsidence), the lack of sediment supply, frequent storm impacts, and human impacts. Land loss rates in 1980 in the parish were about 1.9% of the total acreage or about 14 square miles per year (Gagliano et al. 1981). Most of the parish, except the land adjacent to the Mississippi River in the northern part of the parish, has a projected life expectancy of about 50 years.

Relative sea level rise in Plaquemines Parish averaged about 0.35 inches per year from 1962 to 1982, and ranged from about 0.2

to over 0.8 inches per year (Ramsey and Moslow 1987). Sediment supply to wetland areas has diminished due to the construction of artificial levees along the Mississippi River, and sediment load has decreased in the Mississippi River because of increased diversion of flow into the Atchafalaya River, and the construction of reservoirs and increased use of soil conservation practices upstream (Keown et al 1986). Shoreline erosion, which is largely related to storm impacts, ranges from 15 to 50 feet per year along much of the Plaquemines Parish coast (Penland and Boyd 1981). Canals constructed for oil and gas recovery, navigation, and drainage contribute to land loss because of changes in hydrology and sedimentation, and because of saltwater intrusion which may damage vegetation.

### Flora and Fauna

Due to the wetland setting of the lower delta of the Mississippi River, water essentially determines the landscape in the region of the study area in particular and Plaquemines Parish in general. The Solari Borrow Pit project area itself is located between the riverside levee and the secondary levee. The natural levee of the Mississippi River is the most elevated portion of Plaquemines Parish (Russell 1936) while the surrounding area off the levee is an extensive lowland marsh region containing fresh, brackish, and saline water environments.

Vegetation is the primary diagnostic criterion for determining the type of water environment. Factors such as drainage, soil type, elevation, and soil salinities in various combinations will determine the type of vegetation. Saline type marsh environments are evidenced by such flora as: Oystergrass (Spartina alterniflora), Black rush (Juncus roemerianus), saltgrass (Distichlis spicata), among others. Brackish and intermediate water marsh contains such vegetation as wiregrass (Spartina patens), threecorner grass (Scirpus olneyi), and sawgrass (Cladium jamaicense). Fresh water marsh can be identified by plants such as maiden cane (Panicum hemitomon), pennywort (Hydrocotyl sp.), and water hyacinth (Eichhornia crassipes) (Chabreck et al. 1968).

The elevated areas of Plaquemines Parish, mainly the natural levees along the Mississippi River, obviously provide better drainage and soil development and consequently a different inventory of flora. Trees such as Virginia live oak (Quercus virginiana), black willow (Salix nigra), hackberry (Celtis laevigata), and persimmon (Diospyros virginiana) can be found, while other plants requiring some drainage for root growth like palmetto (Sabal minor), elderberry (Sambucus canadensis), and greenbriar (Smilax spp.) are also present.

Some of the flora in the region may have provided subsistence for prehistoric inhabitants of the area. Acorns, hackberries, and persimmons are edible fruits from trees that grow in the area, while the seeds or berries of plants such as cane and elderberry, among others, provided additional foodstuffs

(Byrd and Neuman 1978).

Prehistoric settlement in the Lower Mississippi Delta has also apparently influenced the current inventory of vegetation in the region or it may provide information about the prehistoric landscape vis-a-vis what is found today. Clair Brown noted vegetational contrasts between the low lying, poorly drained marsh regions of Plaquemines and St. Bernard Parishes and the plant life on and around prehistoric Indian mounds and middens (Brown 1936). Brown proposed that the types of plants found at the archaeological sites indicate vegetation types that might have once been more wide spread in the area before land subsidence and increased salt water intrusion. Plants such as Marsh Elder, Salt Reed Grass, as well as the stumps of Live Oak and pine trees are indicative diagnostic types for areas of slightly increased elevation that are now provided by mounds and middens. In other words, the "mound vegetation is a relict vegetation" (Brown 1936: 437).

Water, land elevations and salinity are also some of the contributing factors for the inventory of animal life in the Lower Mississippi Delta. Much of this inventory was an important food source prehistorically and its importance as such continues to this day. Mammals such as deer (Odocoileus virginianus) that have adapted to the coastal marsh are present where modern development has not destroyed their habitat. Also opossum (Didelphus virginiana), gray squirrel (Sciurus carolinensis), and swamp rabbit (Sylvilagus aquaticus) are examples of animal life that can be found in the area.

Reptiles such as the alligator (Alligator mississippiensis), the eastern box turtle (Terrapene carolina) and a wide variety of snakes are to be found in the Lower Mississippi Delta, including the water moccasin (Agkistrodon piscivorus). Amphibians consist primarily of frogs and toads. Frogs, most notably (Rana catesbeiana), the bullfrog, is a human food source today and may have been prehistorically as well. The toad, however, of the genus Bufo is not normally consumed.

Birdlife is also quite rich in this region of Louisiana and waterbirds are, as might be expected, among the most numerous of all types. Ducks are very numerous, including the Mallard (Anas platyrhynchos), the American pintail (Anas acuta), and the blue winged teal (Anas discors), to name but a small sample. Also present are the Great Blue Heron (Ardea herodias), the American Egret (Casmerodius albus), and the Snowy Egret (Leucophoyx thula).

Fish, of course, were and are widely available as a food source. Many varieties of salt water and fresh water fish can be found in the marshes of Plaquemines Parish as well as in the Mississippi River. A small sample are the Sunfish (Lepomis micromicrolophus), the Bluegill (L. macrochirus), the Alligator Gar (Lepisosteus spatula), and the Largemouth Bass (Micropterus salmoides).



Bivalves such as the American oyster (Crassostrea virginica) and the brackish water clam (Rangia cuneata) were and are significant food sources in the area. Many factors contribute to the natural distribution of either of these species, but certainly one of the most important is the salinity of the water. Oysters, of course, require a saline environment for optimum growth and reproduction. Rangia, however, are brackish water creatures and can be found in areas of less salinity. The shell remains of both, especially Rangia, are frequently associated with prehistoric archaeological sites in coastal Louisiana (Kniffen 1936; McIntire 1958; Neuman 1977)

## SUMMARY OF PREHISTORIC CULTURE HISTORY FOR LOUISIANA

Information provided in this section may be found in several sources, all listed in the bibliography. These sources are Quimby 1951; McIntire 1958; Haag 1971; Neuman 1984; Webb and Gregory 1978; and Kniffen, Gregory, and Stokes 1987. Other, more specific sources are cited where appropriate.

The initial human occupation of Louisiana probably began during the Paleoindian period, perhaps as early as 12,000 years ago. These people hunted, among other animals, now extinct megafauna such as the mastodon and giant bison. Lithic lanceolate projectile points, often with fluting on the sides and smoothed bases for hafting onto spear shafts, are the most diagnostic artifact of this period. With the close of the Pleistocene era, some 10,000 years ago, people were forced into adaptations reflecting new climatic conditions. With the extinction of large animals to hunt, smaller and perhaps a larger variety of game were sought. The inventory of artifacts associated with the Meso-Indian or Archaic period continue to be exclusively composed of lithics, but with a greater variety of tools than in earlier times.

By 1500 B.C., a new cultural development took place in Louisiana, the Poverty Point Culture. These people, named for the type site in West Carroll Parish, constructed a gigantic earthwork system; established far flung trade networks; perhaps practiced horticulture; and developed a unique material culture that is perhaps best represented by the so called Poverty Point Objects that were probably used as clay cooking balls. This culture was apparently wide spread throughout Louisiana, Mississippi, and Arkansas as evidenced by more than 100 known sites. How or why the Poverty Point Culture declined is little understood, but it appears that by 800 B.C., or somewhat later, the traits that mark this period did not continue.

The succeeding Tchefuncte Culture, located primarily in the lowlying regions of Louisiana, was the first culture period marked by the development of ceramics. Originally discerned as a distinct cultural period by Works Progress Administration archaeological work in the 1930s, the material remains of this period have often been associated with middens composed of Rangia cuneata shells, although such middens also frequently have artifacts that date from later times. The earliest date associated with the Tchefuncte Culture is about 500 B.C. with A.D. 300 regarded as the latest date. Most authorities on Louisiana and Lower Mississippi Valley will readily admit, however, that more information is needed to thoroughly describe the Tchefuncte Culture and define its territorial extent.

The Marksville Culture, certainly in full flower by A.D. 100, is generally regarded as a southern extension of the Hopewell Culture associated with the Ohio Valley. The data from the type site at Marksville Louisiana indicate the use of conical

shaped earthen mounds for mortuary purposes, the construction of earthen enclosures, and pottery types that are similar to those found at Hopewell sites. Many Marksville sites, both with and without mounds, are found throughout the Lower Mississippi River Valley. Most archaeological investigation has centered on the mounds, however, so that more is known about the mortuary practices of this time than the habitation sites and subsistence patterns of the people who built the mounds.

Following the demise of the Marksville Culture, prehistoric occupants of Louisiana evolved into what has come to be called the Troyville-Coles Creek Culture. The primary distinction between this period and the preceding Marksville times was the shift from constructing conical shaped mortuary mounds to building pyramidal flat-topped temple mounds that supported ceremonial or elite residential structures. The term temple mound, however, should not be interpreted to mean that such constructions no longer contained burials. 16MA-18, the Mt. Nebo Mound in Madison Parish produced over 100 burials when excavated before the construction of Interstate 20 in northern Louisiana (see Giardino 1982).

This culture period is named after the largely destroyed Troyville (now Jonesville) site and the Coles Creek site near Natchez Mississippi. The Greenhouse Site, 16AV-2, in Avoyelles Parish, however, is generally regarded as the Coles Creek type site for Louisiana. Distinguishing between Troyville and Coles Creek artifacts and sites is a point of some contention among archeologists. Some investigators seek to combine the two periods together and others call for a definite distinction with the Troyville period seen as a transition between Marksville and Coles Creek (see Gibson 1982)

Late in the Troyville-Coles Creek era, ties were formed with Caddoan peoples in northeastern Texas, southern Arkansas, and southeastern Oklahoma. The Caddoan move into northeastern Louisiana resulted in new pottery, much of it polished to a glossy finish; the introduction of beans as a food crop; and the practice of shaft burials into mounds. Neuman (1984) cites many characteristics of the Caddo Culture that he interprets as Meso-American in origin. Whatever the case, in origins or influences, the Caddoan peoples occupied the same region for about 1000 years and were the area's occupants when Europeans first arrived in northwestern Louisiana.

Meanwhile, in the Lower Mississippi Valley after A.D. 1000 the Plaquemine Culture, made archeologically distinct by classic mound constructions and diagnostic pottery, began to develop. The type site for this culture is the Medora Site, 16WBR-1, which was excavated by George I. Quimby in the 1930s as part of a WPA-LSU archaeological project. From Quimby's and later work it appears that the diagnostic Plaquemine ceramics date after the Coles Creek period, but have to date not been reported in association with European artifacts.

The Plaquemine Culture is most often regarded as the forerunner of historically known peoples such as the Natchez, Taensa, and Bayougoula, among others. Furthermore, while the Plaquemine Culture shares many characteristics with the Mississippian Culture north of Louisiana, their ceramic artifacts demonstrate many distinct differences, with shell tempering for the Mississippian Culture being the most frequently cited. Mississippian sites, with cultural connections to the site at Cahokia, Illinois have been found in many parts of the Southeast. In Louisiana, however, little is known of a Mississippian occupation in the state. What evidence exists has been recorded in northeastern Louisiana and in the southeast, primarily along the coast.

The history of prehistoric archaeological research in the region of Plaquemines Parish, the area near the Solari borrow pit, and the borrow pit itself will be discussed below

## SUMMARY OF HISTORIC EVENTS INFLUENCING PROJECT AREA

### Early European Exploration and Colonization

With the arrival of Europeans in the Lower Mississippi Valley, several Indian groups appeared in the historic record. The first European presence in the area may have been the maritime expedition of Alvarez de Pineda, a Spaniard who was searching for an all water route to the Orient in 1519. He encountered and made note of what may have been the mouth of the Mississippi River. Ten years later remnants of the ill-fated Narvaez expedition, which was attempting to colonize Florida, probably sighted what is now Plaquemines Parish while trying to reach the Spanish outpost at Panuco, Mexico (Fortier 1966).

However, the first European encounter causing the greatest disruption in the Lower Mississippi Delta (and, in fact, the entire southeastern United States) was Hernando Desoto's entrada from 1539-1543. The exact route of Desoto's expedition is still much debated. John R. Swanton of the Smithsonian Institute headed what is to date the most exhaustive study of tracing Desoto's route, with the greatest points of uncertainty and contention being: where he crossed the Mississippi; where the great aboriginal center of Anilco was located; and where Desoto died. Swanton, and the United States De Soto Expedition Commission (1935 - 1939) that he chaired, favored a crossing somewhere below the confluence of the St. Francis and Mississippi Rivers; the site of Troyville (Jonesville), La. as Anilco; and the location of the Indian village of Guachoya where Desoto died as somewhere near Ferriday, Louisiana as the answers to those questions (Swanton 1985).

Wherever his route may have been, one thing is certain: Desoto and his party met stiff resistance from the native occupants of the Mississippi Valley and this resistance continued all the way to near the mouth of the Mississippi in what is now Plaquemines Parish. As Swanton reports:

Half a league before coming to the sea they [the Spaniards] cast anchor to rest, for they wer weary with rowing, but while there they were attacked by Indians in seven canoes assisted by others coming by land through thickets and bogs. At least one of these, it is interesting to record, was armed with an atlatl or spear-thrower, this being the only recorded case of the use of such an implement by living Indians in the eastern part of our country..... (Swanton 1985: 265).

In another source, Swanton raised the possibility that the Indians responsible for the use of the atlatl were the Chawasha tribe which was allied to the Chitimacha and lived in the Lower Mississippi Delta in the general region of Plaquemines Parish. Swanton's estimate of the population of these people as of 1650 was 700 although he notes that other authorities proposed esti-

mates of 1,400 for the Chawasha and allied tribespeople (Swanton 1979: 108-109).

A hiatus of 140 years followed Desoto's expedition before there were any more Europeans in the Lower Mississippi Valley. The Frenchman Rene-Robert Cavelier de la Salle was the next explorer to pass through the portion of the Mississippi River that flows through Louisiana and Plaquemines Parish. In 1682, LaSalle made claim to the area drained by the Mississippi River, or Rivere Colbert as it was also called, for his royal sovereign, King Louis XIV and gave that vast area the name of Louisiana. The ceremony making this claim apparently took place on April 9, 1682 at what is now known as "Head of Passes" in Plaquemines Parish (Parkman 1910: 306-307).

In the course of his voyage, LaSalle encountered a great many Indian groups. Unlike Desoto, LaSalle was anxious to promote peaceful relations with the native peoples he encountered, although he was not always successful (Parkman 1910: 305). While he dealt with many native groups, the accounts of his travels do not provide very much insight into the lifeways of the Indians along the Mississippi River. Groups such as the Natchez, Taensa, Coroas, Quinipissas, Tangibao, and Houma are names that occur in accounts of his journey through what is now Louisiana. In fact, while retracing his course back up the Mississippi, the Quinipissas attacked LaSalle and his Frenchmen when they had stopped at their village in search of food and the Coroas likewise gave them a hostile reception (Parkman 1910: 310).

LaSalle's successful voyage was epochal and profoundly influenced the history of the North American continent. His schemes at colonization, however, depended upon countering Spanish claims to the area by locating the Mississippi River from the sea. His efforts to do just that failed in 1685 when another LaSalle expedition, this time ocean going, missed the Mississippi River and landed in what is now coastal Texas. After suffering hardships such as shipwreck, disease, and harrassment from local Indians, LaSalle was assassinated by dissident members of his expedition in 1687 (Parkman 1910).

LaSalle's longtime friend and lieutenant, Henri Tonti (or Tonty), upon learning of LaSalle's misfortunes on the Gulf coast, collected a group of Frenchmen and Indians and went in search of his erstwhile leader in February of 1686. He descended the Mississippi again and, upon reaching its mouth, sent canoes east and west from the river's mouth in search of LaSalle and his colony. Finding no traces or news of his friend, Tonti left a letter with a Quinipissa chief to be delivered to LaSalle should he appear in the area. This letter turned out to be significant for future French sponsored exploration (Parkman 1910: 454-455; McWilliams 1981: 6).

Pierre LeMoyne, Sieur d'Iberville, commonly referred to as Iberville, set out from Brest, France on New Year's Eve, 1689 to succeed where LaSalle had failed and reach the Mississippi River

from the sea, thereby further securing France's claim on this territory in the New World. This was the first of three voyages which explored not only the Mississippi River, but also the coast of the Gulf of Mexico. In his first voyage, on the Badine, Iberville found the mouth of the Mississippi River, and embarked in canoes and longboats in order to prove to himself and his sponsors in France that he had indeed found the same stream that LaSalle and Tonti had descended.

At the mouth of the river, Iberville encountered Indians who had a "belly rub" ceremony of greeting and who called the river the Malbanchya. He then journeyed upstream specifically in search of the Quinipissas or any other Indian groups who might have information about LaSalle or Tonti. He found several Indian towns along the river, but none of their inhabitants volunteered any information about previous French visitors. At a village of the Bayougoula, Iberville was given information by the Indians that conflicted with his understanding of the course that Tonti had taken and he decided to turn back downstream (Iberville 1981: 60).

Iberville descended the Mississippi, but took a detour with a small detachment from his main force along Bayou Manchac. Indian informants had told him that this stream connected with the Gulf of Mexico near where he had anchored his ships by passage through two lakes: Maurepas and Pontchartrain. Upon reuniting with the rest of his expedition, Iberville learned that Tonti's letter, noted above, had been recovered among the Mogoulascha who were in fact one in the same as the Quinipissa and that he had indeed found the Mississippi River; the same stream that LaSalle had descended and claimed for France.

In the course of his visits to the Mississippi, Iberville kept concise journals which described not only the terrain and noted latitude locations, but also provided relatively unbiased and observant descriptions of some of the Indian peoples that he encountered. A good example is a portion of his description of a Bayougoula village:

....I went through their village and huts constructed like the temple, with a lean-to adjoining, some big, others small roofed with split cans joined together quite neatly; there are no windows. These huts get their light from above through a hole 2 feet in diameter and are without paving or flooring except sand and dirt. Their beds are on four posts, raised 2 feet above ground, with crosspieces of red wood nearly as thick as one's arm, on which a mat is spread, made of small canes bound together in such a fashion that they are quite straight but not very soft. For furnishings they have only a few earthen pots, which make nicely enough, fine and well wrought. All the men go around naked, without being self-conscious about their nakedness. The women wear just a braguet, made from bar, most bragquets being white and red. The braguet is

made of a number of strands of bark spun and woven together, eight inches wide for the top part, which covers their loins; the lower part is in foot-long tassels reaching down to above the knees (Iberville 1981:62-63).

This example of the detailed and relatively unprejudiced observations found throughout most of Iberville's journals contrasts sharply with the chroniclers of Desoto's entrada who cared little for describing the people in the land which they invaded.

In addition to accomplishing what he had set out to do by locating the Mississippi from the sea, Iberville also established the first permanent European encampment in Louisiana: Fort de la Boulaye or more commonly Fort du Mississippi in what is now Plaquemines Parish. The small log fort was begun on February 1, 1700, after assurances by the local Bayougoula that this site never flooded. The fort was built by Bienville, Iberville's brother, and was supposed to have contained several cannon and a powder magazine. The purpose of this fort was to guard the upstream approach of the river and solidify France's control of the stream. Figure 2, dating from 1702, shows the location of the fort on the east side of river and reflects other geographic information that could only have come from Iberville's observations. Fort de la Boulaye or Mississippi was abandoned eight years after it was established (Casey 1983: 29-30).

In 1718 Bienville, Iberville's brother and the governor of Louisiana, initiated the construction of a new colonial capital. He chose a strip of land where Bayou St. John made feasible the easy transit between Lake Pontchartrain and the Mississippi River. This site became the city of New Orleans. Despite initial hardship and suffering, the success of this community shifted the focus of colonial Louisiana somewhat upstream and profoundly influenced the history of Plaquemines Parish downstream.

The 18th century saw great disruption of aboriginal society throughout the Southeast as the various colonial powers included the Indians in their alliances and pitted various groups against one another. Moreover, the introduction of European diseases such as smallpox had a devastating effect on the native populations of North America. An often cited example of such disruption is the French destruction of the Natchez nation in 1729 near the city in Mississippi after a series of provocations between the two peoples throughout the 1720s (Swanton 1979).

More pertinent to Plaquemines Parish, the Chawasha people occupied various sites on the Lower Mississippi Delta, including the same area that witnessed the atlatl attack on Desoto. They were the victims of a punitive expedition ordered by Governor Perrier in 1730 to essentially quiet the fears of colonists in New Orleans who perceived a general uprising of all Indians during the Natchez War. This raid was carried out by black slaves who were armed by the Governor and plantation owners near



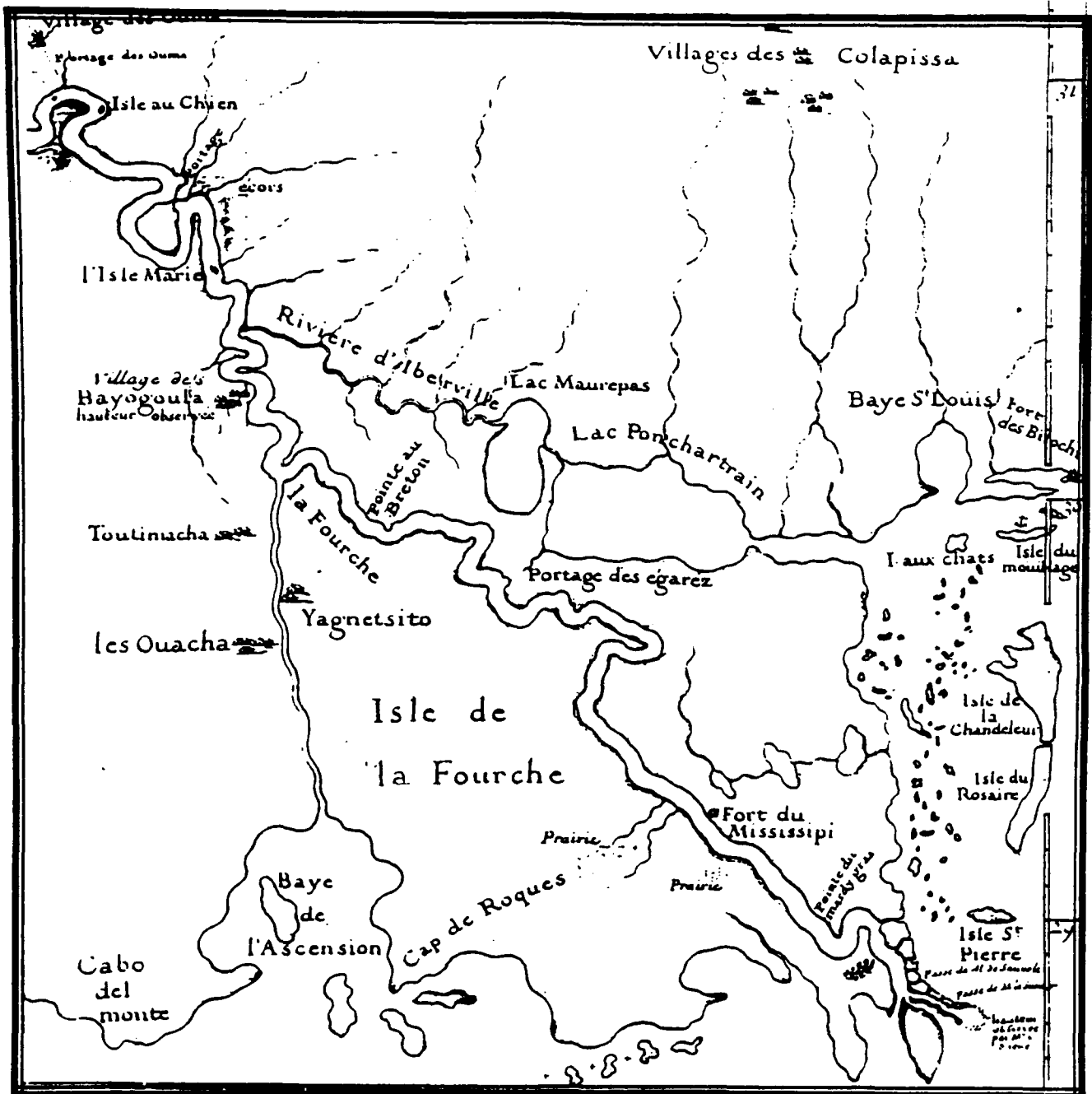


FIGURE 2. PORTION OF GUILLAME DE ISLE'S 1702 CARTE DE LA MISSISSIPPI SHOWING THE LOWER MISSISSIPPI DELTA.

SOURCE: CARTOGRAPHIC INFORMATION CENTER, MAP LIBRARY, LSU

the so called English Turn area of the Lower Mississippi Delta.

According to one source (Meyer 1981), the site of this raid was the Scarsdale Mound (16PL-20). At one time, according to this source, human bones were on the surface of this site which suggested, to that author at least, that those killed were left at the scenes of their death. The site form for the Scarsdale Mound in the Louisiana Division of Archaeology Site Files, however, only records that a shell midden of considerable size (400 X 30 X 5 feet) exists and that cultural material has been collected from the site. There is no information confirming that this site was the scene of the raid on the Chawasha. Reports of how many Indians died in the raid vary. Meyer says "forty Indian braves together with women and children were slaughtered" (Meyer 1981: 30), while Swanton claims that only seven or eight adult males were killed. This raid did not totally destroy the Chawasha people, for reports of their existence continued for another 50 years as they shifted their village locations (Swanton 1979: 109; Kniffen et al 1987: 56).

#### European and American Settlement

The Mississippi River, of course, was seen as a vital avenue for commerce and political control for much of North America. To protect commerce and insure control, military fortifications along the Mississippi River in Plaquemines Parish continued to be established and manned throughout the French and Spanish colonial periods and well into the 20th century. For example, Fort Balize was established by the French in 1721 at what was then the mouth of the Southeast Pass of the Mississippi River. By the 1750s, hurricanes and flooding had caused the French to abandon this site (Casey 1983: 7-8). The Spanish also constructed a fort in the general region of Balize in 1767 and maintained a garrison there until the transfer of the region back to the French in 1803 (Casey 1983: 9-10).

Fort St. Phillip and Fort Jackson, across the river from one another at Plaquemines Bend in Plaquemines Parish, were easily the most important military constructions in the Lower Mississippi Delta. Their obvious intent was to safeguard the approach to New Orleans up the Mississippi River. Fort St. Phillip was erected sporadically in the late 1700s by the Spanish on the east bank of the Mississippi River. Work on the fort and subsequent garrisoning of the site was greatly hampered by logistical problems and hurricane damage in 1793 and 1794. The fort was taken over by the Americans with the Louisiana Purchase and new construction began soon thereafter. The fort was occupied by military troops until 1922 (Casey 1983:204-213).

Fort Jackson, constructed near the site of the Spanish Fort Bourbon, was started in 1814-15 during the War of 1812, but construction continued at various times until the 1850s; until this fort and Fort St. Phillip saw their heaviest action during the American Civil War. With the secession of Louisiana from the Union and its joining of the Confederacy, these two forts in

Plaquemines Parish became increasingly important. The strategists of the Union quickly realized the importance of controlling the Mississippi River for the overall success of the war effort and Federal troops had taken possession of Ship Island in the Gulf of Mexico as early as December of 1861 to prepare a campaign against New Orleans (Dimitry n.d.: 35)

The Confederates under General Mansfield Lovell concentrated their defenses on the two forts whose guns could sweep a considerable length of the river. To enable the defenders to concentrate their firepower, the Confederates also constructed a chain and log boom stretching across the river between the forts. Composed of forty foot long cypress logs and connected by large chains requisitioned from ships in New Orleans and held in place by heavy anchors, this boom completed the defensive bulwark on the upstream approach to New Orleans (Winter 1963: 65-66).

Once these preparations were made, most citizens of New Orleans believed they were safe from a Union invasion. To their dismay, they learned that by mid-March of 1862 Admiral David Farragut had positioned a fleet of 17 men-of-war and 20 gunboats at Pilot Town. This flotilla began shelling Forts Jackson and St. Philip on the morning of April 18 with the Federal forces hoping that constant bombardment would cause the defenders to surrender. This proved not to be the case, so during the night of April 20, Farragut attempted to destroy the boom. Though this effort was only partially successful, in the pre-dawn hours of April 24 Farragut's fleet made their attempt to pass the forts. Caught by surprise, the Confederates were unable to concentrate their artillery on the Federal ships. The sunrise revealed that all but three of Farragut's ships were safely above the forts. Acknowledging his inability to defend the city, Lovell ordered his troops to abandon New Orleans and retreat northward across Lake Pontchartrain to Camp Moore. Forts Jackson and St. Phillip surrendered on April 28, 1862, and the following day Federal forces formally took possession of New Orleans (Winter 1963:85-101).

The area of Plaquemines Parish has for most of its history been a commercial and strategic appendage of New Orleans. Organized during colonial times as the Post of Plaquemines, original control extended over much the same area as the present parish, but other developments besides military installations were also occurring in its early history. Plantations, especially those growing sugar cane and rice, developed during the 19th century both before and after the Civil War and according to Meyer their production, at least before the War, was exemplary. He writes: "Taken collectively, Plaquemines Parish in 1858 produced 8480 hh of sugar on the right descending bank of the river, and 5836 hh on the left bank...At that time there were 19 sugar houses and 4 rice mills on both sides of the river" (Meyer 1981:55). Meyer names and describes many plantations on both sides of the river in Plaquemines Parish some of which are of considerable historic importance including the site of Judah P. Benjamin's plantation and mill in what is now Belle Chase, La. Benjamin, a rarity as a

Jewish slaveholder, served in several cabinet positions of the Confederate government, and became one of Jefferson Davis' most trusted advisors. He escaped to Britain after the Civil War and enjoyed a successful career as a lawyer (Eaton 1954; Meyer 1981:59).

In addition to plantations and agriculture, hunting, trapping, and fishing also played an important role in the settlement and economic development of Plaquemines Parish. One of the more unusual aspects of that development was the settlement of immigrants from the Dalmatian coast on the Adriatic Sea what is now the country of Yugoslavia. At the time of their coming to the United States in the mid and late 19th century, their homeland was part of the Austro-Hungarian Empire. Many of these immigrants settled in New Orleans and worked on the river, but many also went downstream and became oyster fishermen who supplied New Orleans and other markets with their catches. Many of the modern residents of the towns of Buras, Empire, Ostrica and Venice are descended from these Damatians and many continue to gather oysters as a livlihood (Lovrich 1967; Vujnovich 1974).

With the discovery of oil and natural gas in 1928, a new industry entered Plaquemines Parish. Much of the activity in the oil industry occurred in swampland and coastal marsh that were controlled by local levee districts. Control of the leases to the oil companies through the districts came to be associated with Judge Leander Perez in the mid 20th century and the legacy of this man's political influence continues in Plaquemines Parish today. While much of the wealth generated by oil and gas leases found its way to providing much need services in the parish, Perez's control was also very controversial (Jeansonne 1977).

The project area of the Solari borrow pit is located in the community of Empire, Louisiana, which was apparently named after a popular nickname applied to this area of Plaquemines Parish. There is record of a steamship named "Empire" and another named "Empire Parish". These vessels were built by the planters in Plaquemines Parish to transport people, mail and produce between the Lower Mississippi Delta and New Orleans (Meyer 1981). Currently the town's economic base is commercial fishing, oil field service, and hunting and fishing for sportsmen. There are few structures of historical note in the town. The Empire Hotel, dating to the construction of the Dollut Canal in 1905, and St. Ann Church are wood frame structures of some cultural signifigance (Gagliano 1979).

As noted above, Empire was settled in part by Yugoslav fishermen in the late 19th century and their work was greatly aided by the construction of the Dollut Canal and lock at Empire in the early 20th century. This allowed oyster boats more direct access to oyster beds at places like Bayou Cook, Ferrand Bay, or Adams Bay. Previously, oystermen had to go all the way down the river, past its mounth, and turn northwards to these locations. Without doubt this lock contributed significantly the nature of the modern settlement of the town of Empire. Currently, the area

around the Dollut Canal contains a small boat port, boatyards, and seafood processing sites. Two bridges cross the canal, the old railroad bridge along the old route for Louisiana Highway 23 which is a drawbridge still in operation, and the newer raised bridge on highway 23. The older route of Highway 23 is essentially the main street for Empire Louisiana and most of the commercial establishments in the town front this road.

PREVIOUS ARCHEOLOGICAL AND CULTURAL RESOURCES INVESTIGATIONS  
IN THE REGION OF THE PROJECT AREA

While aboriginal settlement in the Lower Mississippi Delta in Plaquemines and St. Bernard Parishes was long noted by Europeans, little was done to investigate the nature of prehistoric aboriginal settlement in the area until relatively recently. In 1936 geographer Fred B. Kniffen of Louisiana State University reported on 50 sites of prehistoric occupation in Plaquemines and St. Bernard Parishes, 44 of which he was able to visit. Kniffen devised a system of classification that contained four types of sites: earth mounds, shell mounds, shell middens, and beach deposits. Figure 3 shows the distribution of these sites. While the first three are man made features, Kniffen did note the deliberate nature behind the construction of earthen mounds as opposed to shell mounds and middens. Also he noted that accumulations of Rangia cuneata shell dominated the shell mounds or middens, but that a number of sites also had a preponderance of marine shells, namely Ostrea (Kniffen 1936: 408-409).

Kniffen's report on the distribution of prehistoric archaeological sites in these parishes in the Lower Mississippi Delta and in Iberville Parish two years later (Kniffen 1938) occurred at time when scientific archaeology was becoming established in Louisiana. Such researchers as James A. Ford, Gordon Willey, and George I. Quimby, working under the sponsorship of the Works Progress Administration in the 1930s, made important contributions to the study of prehistoric Indian occupation in the Lower Mississippi Valley. Likewise, Kniffen's geographical approach to noting the distribution of sites and relating them to natural land forms have continued to influence archaeological research in Louisiana (e.g. Jones and Shuman 1986, 1987, 1988).

Another archaeological investigation of note in the Lower Mississippi Delta was carried out by William G. McIntire of Louisiana State University. A primary focus of McIntire's work was to not only document prehistoric sites on the various delta's of the Mississippi River, but to also correlate the dates of occupation of some sites with the periods when certain deltas were active channels (McIntire 1958: v). Figure 4 from McIntire's report shows the relative dearth of prehistoric sites near the project area. Many of these sites were found to be associated with the Plaquemine culture or even protohistoric sites. This was no doubt due to the recent natural construction of the modern delta of the Mississippi (McIntire 1958: 81).

Archaeological research continued in coastal Louisiana after McIntire's work. Robert W. Neuman of Louisiana State University attempted to organize and catalogue all the available information on coastal prehistoric Indian sites. He recorded 26 sites in Plaquemines Parish, one of which was a historic fort. Of these sites, the overwhelming majority were shell mounds or middens and prehistoric occupations, where data were available, ranged from Troyville through Plaquemine times, with Mississipp-

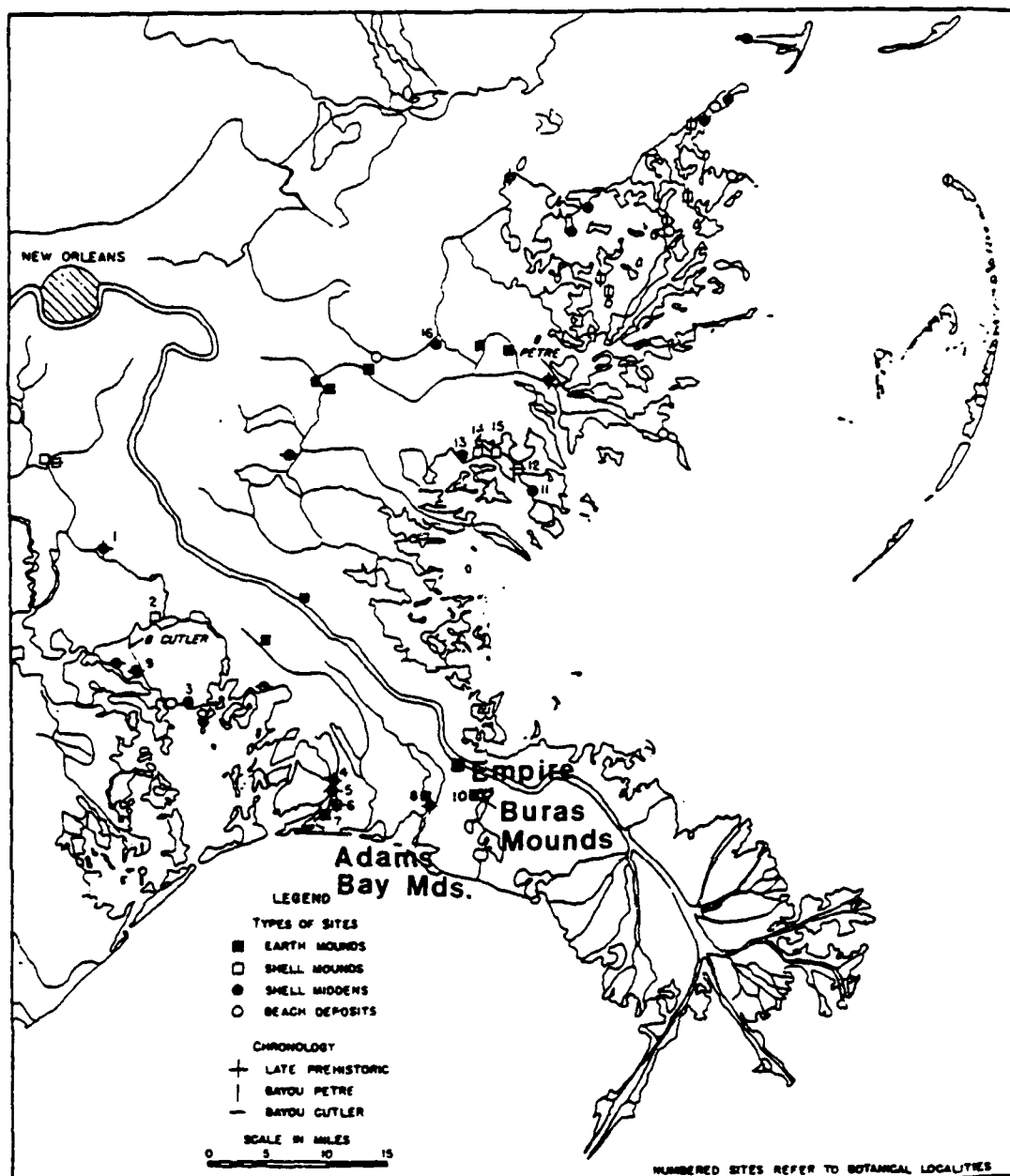


FIGURE 3. PREHISTORIC INDIAN SITES IN LOWER MISSISSIPPI RIVER DELTA.  
MODIFIED FROM KNIFFEN 1936





pian components found at four sites. According to Neuman's list there were four sites in Plaquemines Parish that had earthen mounds, but one site 16PL-8, the Adams Bay site, which he had listed as a "shell mounds and midden" has been reported by others as a site containing earthen mounds (Kniffen 1936; Neuman 1977: 25-26; Hunter and Reeves 1988; DOA site files).

In the general vicinity of the Solari borrow pit, the most significant prehistoric site appears to be the Adams Bay site approximately approximately three miles to the southwest on the southwestern shore of Adams Bay. This site, 16PL-8, was originally reported by Kniffen in 1936 (see fig. 3 & 5) and was described as containing three earthen mounds. The largest, Mound 1, had basal dimensions of 89 X 54 feet and dimensions at the summit of 65 X 30 feet. This mound as of 1936 stood 5 1/2 feet above the marsh. Mounds 2 and 3 were irregularly shaped and had dimensions of approximately 30 feet in diameter and were two feet above the marsh. Kniffen also reported that there were five small heaps of shell: three mainly oysters and two mainly rangia. He noted that eight sherds were collected from the site, some of which came from the mounds. McIntire (1958) gives the site a Plaquemine cultural affiliation, but it is unclear on what data he bases this conclusion. Later reports on the site note that the mounds are extant, at least as of 1978, but that the shell middens were no longer visible (DOA site files).

In addition to the Adams Bay site, 16PL-13, the Buras Mounds, is located about three miles south of Empire, La (see fig. 5). This site is composed of four mounds, originally reported by Kniffen as three mounds (1936), and apparently it is the mound site closest to the mouth of the Mississippi River. More recent investigations by Coastal Environments, Inc. (Gagliano and Weinstein 1979) have found, among other things, human remains, well preserved charred corn (Zea mays) cobs, and a sizeable collection of aboriginal ceramic sherds. The site was apparently a ceremonial center and a surrounding village. The ceramic types recovered during this investigation indicated that the major occupation of the site occurred during the early to late Mississippian period and was possibly proto-historic and reflected a conjunction of cultural influences from the eastern Gulf and the Mississippi Valley. Correlation of geomorphological data and ceramic styles suggest that the site was inhabited from about A.D. 1400 to A.D. 1550 and may have been occupied during the time of Desoto's entrada (Gagliano and Weinstein 1979: 30-33).

Numerous cultural resources surveys have been conducted in Plaquemines Parish in the past ten years or so. Most of these were carried out under contract to the New Orleans District of the U.S. Army Corps of Engineers. These surveys have varied widely in size of survey area and methodologies employed. Most of the sites newly reported or investigated by the surveys have been historical sites.

Several of these investigations are pertinent to the current

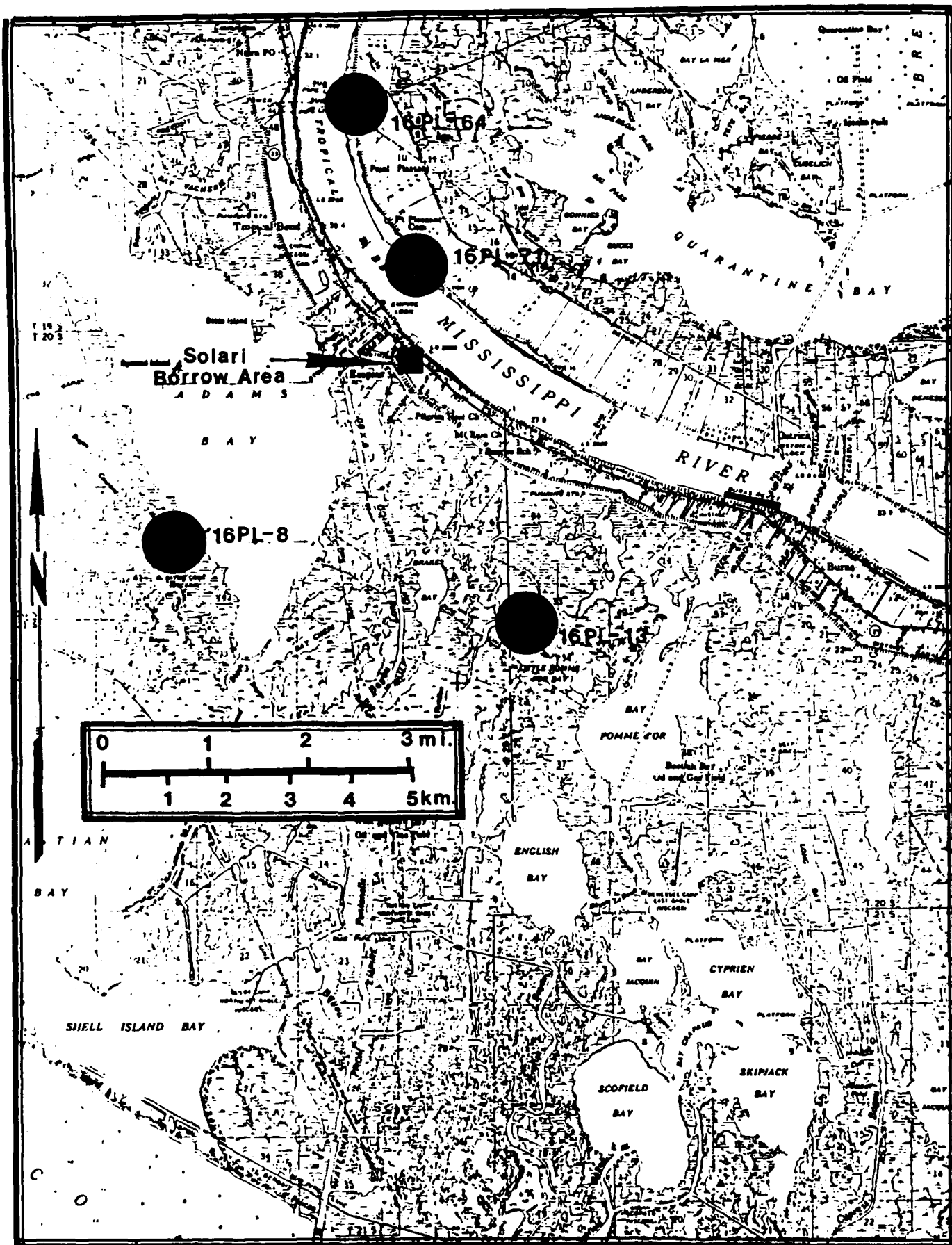


Figure 5. Portion of Empire, La. 15' Quadrangle showing Solari Borrow Area and some nearby reported archaeological sites.

study area. Among these is An Archaeological Survey of the Lowermost Mississippi River (Davis et al 1979) conducted by the Department of Anthropology at Tulane University. This contract was awarded to survey the east bank of the Mississippi River from River Miles 10 to 45 and from River Miles 10 to 20 on the west bank in southern Plaquemines Parish. This report contained an admirable overview of the geomorphology, natural setting, and sites of prehistoric and historic settlement in the area. Across the Mississippi River, on the east bank and upstream from the Solari borrow pit, Davis et al reported on two sites of historic occupation: 16PL-64, the Point Pleasant Camp, and 16PL-71, Empire Oil Field I. Both sites consisted of abandoned wooden frame buildings with associated historic debris that dated the sites to the late 19th and early 20th centuries. No sites near the Solari borrow pit project area were reported by this survey, however.

Other cultural resource investigations in the general region of the Solari borrow pit area in southern Plaquemines Parish include work done in 1981 by the Iroquois Research Institute which investigated 14 New Orleans District planned levee and revetment locations (Iroquois Research Institute 1982). Also, R. Christopher Goodwin and Associates, Inc., conducted investigations for five proposed revetment areas along the lower Mississippi River in which some sites were reported, notably 16PL-131, a historic house site and 16PL-132, the Old St. Patrick's Cemetery, both in Homeplace, La. which is outside the current survey area (Goodwin and Associates 1985).

The most recent cultural resources investigation in the vicinity of the Solari borrow pit was carried out by Coastal Environments, Inc. at the nearby Homeplace and Tropical Bend borrow areas upstream from the current study area. This investigation found that the Tropical Bend borrow area had been impacted by recent construction and that the Homeplace Borrow area contained cultural debris, but that it was of such a recent age, that it did not warrant designation as an archaeological site (Hunter and Reeves 1988).

## THE SOLARI BORROW PIT AREA

### Historical Investigation Regarding the Solari Borrow Pit

The earliest traceable owner of the tract of land containing the Solari borrow pit was John Gravier. At an indeterminable point prior to 1825, Gravier acquired the title to eighty arpents of Mississippi River frontage in Plaquemines Parish, each arpent being forty arpents in depth. As a result of the suit of Jaques Gravier et al vs. John Gravier, heard in the First Judicial Court of Louisiana on October 4, 1825, this tract was put up for public sale and was purchased by the noted philanthropist and land-grabber, John McDonough (Inventory of John McDonough, A. Mazureau, 1850, NONA).

Although this tract eventually came to be known as the "McDonough Farm", it does not seem that the land was agriculturally developed or occupied up to McDonough's death on October 26, 1850. In his will, McDonough divided his large estate (valued at over two million dollars) between the cities of New Orleans and Baltimore. Not until seven years later, as a result of the suit, City of New Orleans vs. City of Baltimore, American Colonization Society and the Society for the Relief of Destitute Orphan Boys of New Orleans, was McDonough's estate partitioned. This parcel of land, along with other tracts in Plaquemines Parish owned by McDonough, was granted to the City of New Orleans and was approved for sale on May 27, 1858 (Charles Edward Fortier, February 1, 1860, NONA).

On January 21, 1860, this land was surveyed by Louis Pilie, City Surveyor of New Orleans. His map showed no structural improvements on any of the lands owned by McDonough. On February 1, 1860, two hundred seven river front arpents in Plaquemines Parish that had been bequeathed to the City of New Orleans were purchased by Effingham Lawrence and Bradish Johnson. Lawrence was the manager of Magnolia Plantation and Johnson owned Woodland Plantation, both located in Plaquemines Parish (Charles Edward Fortier, February 1, 1860, NONA).

Any plans the two men had for developing the land were dashed by the secession of Louisiana from the Union and the spectre of civil war. On April 9, 1861, only three days before the Confederates fired upon Fort Sumter, the plot of land designated as section A, tracts 11-15, on Pilie's map, was sold by Lawrence and Johnson to William Louderbough (COB 14, Folio 439, Plaquemines Parish).

Like the previous owners, it does not seem that Louderbough developed the land either. Louderbough died sometime in 1890 or 1891 (his date of death and succession cannot be located) and he bequeathed this parcel of land to his four children, William Jr., Charles, Mary, and Benjamin. On February 29, 1892, the latter bought out his siblings' interest in the land for thirty five hundred dollars (COB 29, Folio 693, Plaquemines Parish).

It seems that Benjamin Louderbough did nothing with the land either, for on August 8, 1910, he sold the land for only two thousand dollars. The purchaser was Sam Henderson, Jr., who also owned the tract which lay upstream from this parcel (MOB 3, Folio 288, Plaquemines Parish).

On June 9, 1916, Henderson died intestate in New Orleans. His tract of land in Plaquemines was appraised in probate as being worth twenty four hundred dollars. No specific improvements were noted. On August 29, 1916, this land was ordered to be sold in order to pay the debts incurred by his daughter and heir, Marie E. Henderson. On November 11, 1916, these five arpents were purchased in the names of their present owners, the Solaris: Laura, Maud, and Georgiana (Succession of Sam Henderson, Jr., Civil District Court, Docket 116834, Orleans Parish).

Once again, the Solaris left the land untouched. By World War II, all three women had moved from New Orleans to New York City. On November 6, 1946, the land was leased for five years and nine months to Nicholas D. Olivier. Olivier was given the rights to drill for oil and make any necessary improvements (COB 121, Folio 287, Plaquemines Parish). As of 1959, it seems that oil had not been found of the tract and the drilling efforts were apparently abandoned.

#### Archeological Investigations of the Solari Borrow Pit

The area of the Solari borrow pit is a 24 acre parcel of land that fronts old Louisiana Highway 23 for approximately 1000 feet on the north and extends south to a drainage canal for about 1000 feet on the west and approximately 1250 feet on the east. The parcel extends for about 1200 feet along the drainage canal on the southern boundary. It is currently overgrown in scrub brush and grass, with a few isolated stands of oak and hackberry trees. The site had been surveyed by the New Orleans District of the Army Corps of Engineers and a temporary benchmark was set near the northeastern corner of the property (see fig. 6 and 7).

Archeological investigation of the Solari borrow pit consisted of intensive pedestrian survey with shovel testing. The survey consisted of transects of 20 meter width over the property in more or less north to south direction paralleling the property lines of the parcel. Shovel tests were carried out at 50 meter intervals and to depths of at least 30 cm. during the transects in an effort to locate any subsurface cultural features. Screening through 1/4 wire mesh screens was originally planned for this survey, but the consistency of the soil made this impractical. The fill from all shovel tests was broken apart by shovel and/or trowel and inspected. The soil encountered in the shovel tests was, with only a few variations, very thick, dark alluvium that was noted as 10YR 3/1 on the Munsell Soil Color Chart and very typical of the natural levee deposits of the Mississippi River. The variations to this soil occurred when the shovel tests encountered water just below the

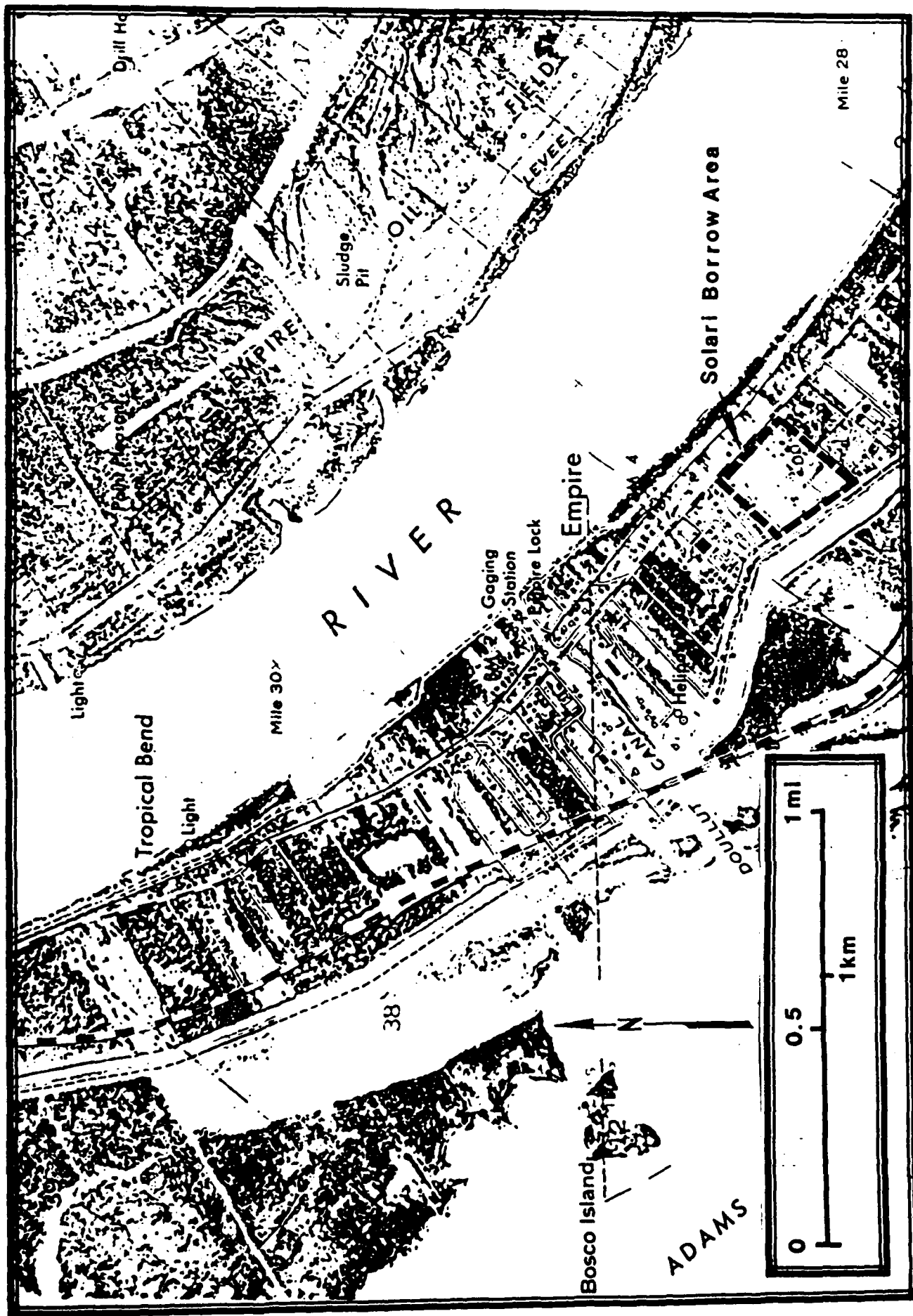


Figure 6. Portion of Port Sulphur, La. 7.5' Quadrangle showing Empire, La. and location of Solaris Borrow Pit Area

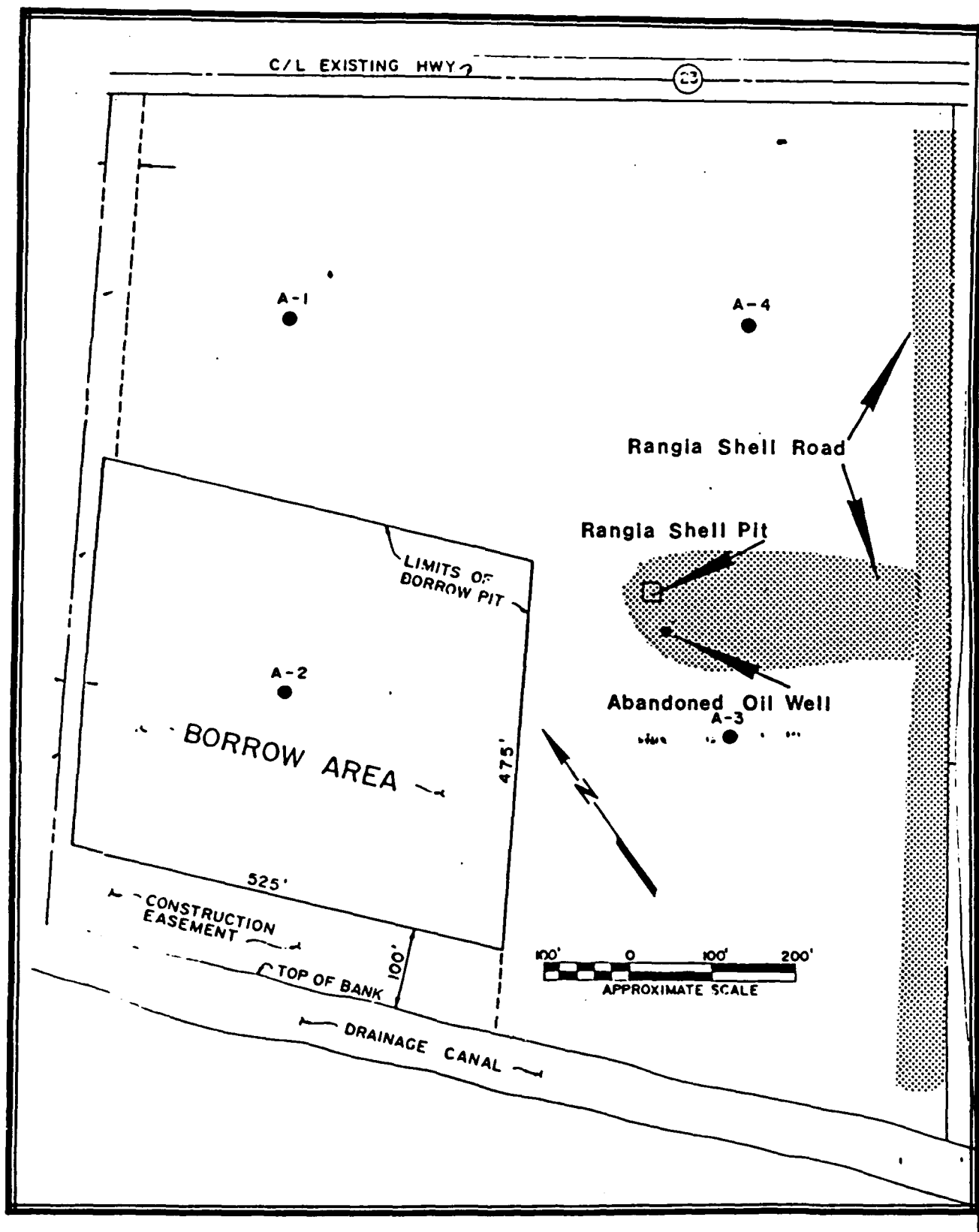


Figure 7. Map of Solari Borrow Pit area and location of abandoned oil well and related features.

surface. No shovel test produced culturally significant material.

The primary results of the pedestrian survey and the shovel testing at the site was the discovery of a shell road, primarily composed of Rangia cuneata shell, with some oyster, along the eastern side of the parcel. This road extended almost to the drainage canal at the southern end of the property and also branched westward for about 100-150 feet. In addition, a single wooden utility pole, a portion of a pump motor with an aluminum cover, drainage hoses, a single rusted metal post with a metal ladder attached, and a roughly square spoil pit composed of packed Rangia shells marked the site of what must have been the oil drilling efforts of Mr. Nicholas Olivier (see fig. 7).

In addition, recent historic material was found scattered throughout much of the site. It consisted of bottle glass, asphalt shingles, cans and paper. None of this was in any concentration to indicate that there had ever been an inhabited structure on the site. However, some concentrations of modern trash were found along the western side of the property which is behind several mobile homes and then along Highway 23 where debris had no doubt been thrown from passing vehicles.



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